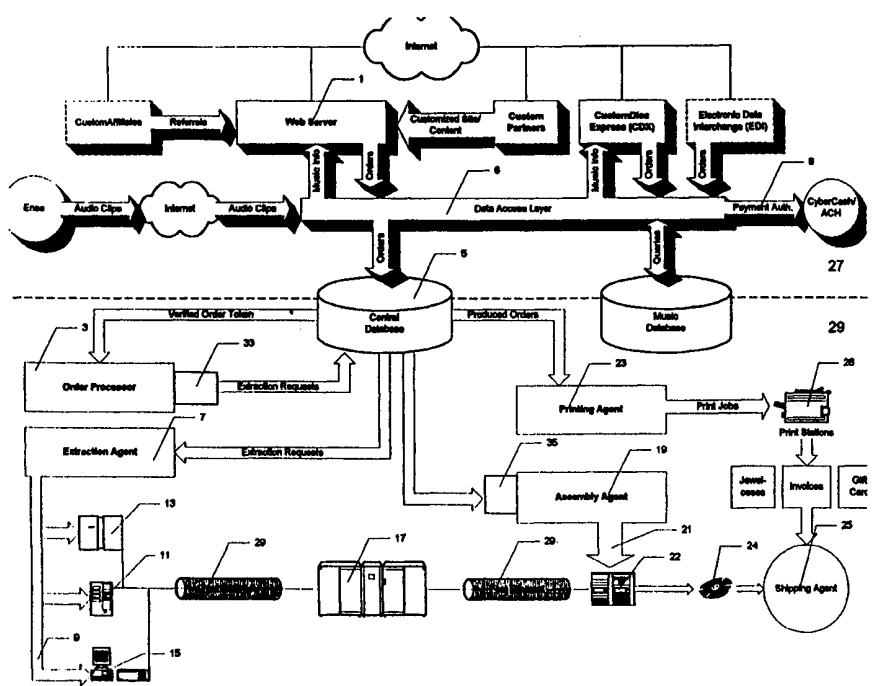




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<p>(21) International Application Number: PCT/US00/00592 (22) International Filing Date: 11 January 2000 (11.01.00) (30) Priority Data: 09/228,629 11 January 1999 (11.01.99) US (71) Applicant (for all designated States except US): CUSTOM REVOLUTIONS [US/US]; One Atlantic Street, Stamford, CT 06901 (US). (71)(72) Applicants and Inventors: DARVEAU-GARNEAU, Nicolas [CA/US]; 21 Grigg Street, 3F, Greenwich, CT 06830 (US). GOULD, David, A. [US/US]; Apartment 1106, 180 Broad Street, Stamford, CT 06901 (US). HAGUE, Moinul [US/US]; 229 Center Street, Williston Park, NY 11596 (US). (74) Agent: WALDBAUM, Maxim, H.; Pryor Cashman Sherman & FLynn LLP, 410 Park Avenue, New York, NY 10022 (US).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>

(54) Title: PRODUCTION OF CUSTOMIZED COMPACT DISCS



(57) Abstract
A system for producing and distributing customized CDs (24) containing sound tracks or other multimedia data (15) selected by a customer, in which the system recovers from failures of a data network (27) used to control the flow and to transmit the sound tracks or other multimedia data (15) from large capacity storage media to a CD ROM writer.

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1 PRODUCTION OF CUSTOMIZED COMPACT DISCS
23 Field of the Invention

4 This invention relates to the field of data recording, in
5 particular for recording music on writeable compact discs. It
6 also relates to the operation of fault correcting and scalable
7 data networks used to transmit and record large quantities of
8 digital data.

9 Background of the Invention

10 A small industry has grown up providing to the public so-
11 called "one off" compact discs which contain music tracks that
12 have been selected by the purchaser. In order to make such
13 industry profitable where there is no mass production of
14 identical CDs, it is essential to efficiently interact with many
15 customers to determine which music tracks each one desires on
16 their CD, to efficiently access the desired music, to convert it
17 to a format suitable for recording on a writeable CD ROM disc, to
18 "burn", i.e. record, the music on the writeable CD ROM disc, and
19 then to package the disc in a format that is attractive to the
20 customer and which provides the information that the customer
21 requires to understand what is on the disc and how to access it.
22 Furthermore it is necessary to efficiently account for royalties
23 owed to the content owners, i.e. the copyright proprietary, and
24 to accomplish billing the customer and maintaining records of

1 accounts.

2 All of these steps are inherent in the business of marketing
3 customized CDs and there are several companies that entered this
4 business after the writeable CD became available. Patents have
5 also been issued describing the opportunities made apparent by
6 the existence of the writeable CD. US patent 5,592,511, for
7 example, envisioned a system in which music content transmitted
8 from central depositories by satellite link would be integrated
9 with other content supplied by the customer delivered to the
10 customer. Although this patent indicated the possibility of
11 building a business around the one of a kind CD its business
12 model was impractical in the extreme. Basically it left to the
13 reader of the patent the need to solve formidable problems of
14 dealing with large blocks of data and in particular had no
15 discussion of how the very significant problem of dealing with
16 errors arising during the preparation of the final product would
17 be solved. It's hint at an implementation failed to address
18 problems inherent in computer systems that shut down at various
19 points, problems that multiply as one attempts to enlarge the
20 system and actually build an efficient business supplying large
21 numbers of customers.

22 Brief Description of the Invention

23 It is an object of the present invention to provide a system
24 which is operated at a single site or over an Internet to

1 interface with a mass of individual customers and manufacture and
2 account for a customized CD, in which a system is used that
3 recovers from failures of components as it transmits the music or
4 other content from a large capacity storage medium to the CD ROM
5 writer, i.e. the burn-in unit. It is a further object of the
6 invention to provide an assembly system which permits the
7 handling of orders from multiple customers in parallel, allowing
8 different tasks to complete at different rates, brings together
9 the information and content necessary to complete a task, without
10 confusion of the information and content of different customers,
11 and which is tolerant of the failure of performance with respect
12 to one customer without interrupting the performance with respect
13 to other customers and which provides for the recovery with
14 respect to the failed performance.

15 The invention is achieved by utilizing the recovery
16 capabilities of a packetized network system. In particular, each
17 task to be performed is monitored by parameters stored in a
18 database, and each item of information necessary to transmit from
19 one location to another is managed in packets having headers that
20 contain status information upgraded as tasks are completed. This
21 status information is communicated to the database, which can
22 provide a central monitoring function. But, in addition, during
23 the processing of the information, the headers of the data
24 packets arriving at processing locations allows the efficient
25 organization of the workload at such a location. Faults in the

1 arriving data are noted and the system bypasses such data and
2 refers for correction and further processing without interfering
3 with the flow of fault-free data, thereby allowing the system to
4 continue in operation, and to correct the faulty data. The
5 system is also constructed in such a manner that it can be
6 enlarged, i.e. scaled up, by the addition of hardware components
7 without having to modify the data network communicating with the
8 hardware.

9 Brief Description of the Drawings

10 Figure 1 is a schematic representation of the network of the
11 present invention and representative hardware elements.

12 Figure 2 is a schematic representation of the order
13 processor portion of the present invention.

14 Figure 3 is a schematic representation of the extraction
15 agent portion of the present invention.

16 Figure 4 is a schematic representation of the assembly agent
17 portion of the present invention.

18 Figure 5 is a schematic representation of the printing agent
19 portion of the present invention.

20 Figure 6 is a schematic representation of the network
21 topology of the present invention.

22 Figure 7 is a schematic representation of the TCP/IP network
23 portion of the present invention.

1 Detailed Description Of A Preferred Embodiment

2 The preferred embodiment of the invention is described for a
3 system to produce and distribute customized audio compact discs,
4 i.e. CDS having sound tracks selected from a preexisting library,
5 which may itself exist on mass produced CDs. The term CD is used
6 generically to also include DVD discs, laser discs or other
7 digital or optical recording media. The same system may be used
8 to provide other multimedia content onto the customized compact
9 disc, or onto other media. The term "multimedia content" is
10 meant to include audio, video, graphic, text or any other
11 content. The data recorded is not necessarily restricted to
12 digital information. Thus, for example, the invention could be
13 used for the production of customized laser discs having video
14 content, even though the information stored on laser discs is in
15 fact analog video information. The invention provides a system
16 for managing the huge amounts of audio data or other multimedia
17 content, on the order of a gigabyte as determined by the capacity
18 of the storage media, that must be efficiently and accurately
19 transferred from the library to the output disc, and other
20 details involved in providing an attractive CD product, while at
21 the same time being fault tolerant and able to efficiently
22 recover from the failure of its components. A preferred
23 embodiment will be described in connection with the figures.

24 The system for producing and distributing customized CDs
25 comprises a group of hardware elements that are linked by a

1 communications network that carries information as data packets,
2 some of which carry the large data files and others of which
3 coordinate the various tasks involved in assembling and producing
4 the compact disk product, or which carry both types of data.
5 Large volume files comprising the content of the sound tracks or
6 other multimedia data are thus transmitted over the network in
7 data packets. The data packets have header fields that are used
8 to control the flow of status information and content. A
9 complete set of the header fields for the data packets is shown
10 in Table I, below. It should be understood that it is not
11 necessary or desired that each packet should include all the
12 header fields. In order to minimize bandwidth overload of the
13 network each packet utilizes only so many of the header fields as
14 are necessary to monitor the status of each packet. Certain of
15 the fields comprise header tokens. A token may be a flag used to
16 indicate the status of an operation. In general, a token is any
17 means used to indicate the status of a packet and may include a
18 bit flag, the status of any flip-flop or multistate device or any
19 logical or data information stored in a read/write memory, to
20 keep track of the status of any aspect of the data in an
21 associated packet. The preferred tokens in the present invention
22 are data stored in header fields of network data packets in order
23 to identify the present operation in which the data packet is
24 participating or, if not subject to a present operation, the last
25 operation that has been completed or the next operation to be

1 performed. In this manner, tokens allow each data packet to have
2 identify its current status in the procedure for creating a
3 customized CD. Tokens which indicate that processing is
4 occurring under the control of a particular component of the
5 overall system are said to be "locked" by that component. When
6 that component has completed its processing of the data of the
7 particular packet, it so-indicates by altering the token so that
8 another component may commence its processing of the data in that
9 packet, which is termed "unlocking" the token. The next
10 component which commences processing than again locks the token.

11 The hardware elements of the system, as shown in Figure 1,
12 comprise the Web server 1, Order Processor 3, Extraction Agent 7,
13 Assembly Agent 19, and Printing Agent 23, all networked to the
14 central database 5. The Extraction Agent 7 controls an
15 Application Programming Interface 9 which is the hardware
16 interface to a sound file library stored on hard discs 11, CD
17 jukeboxes 13, or other library elements 15, which may include
18 manual library elements to supplement those that are automated
19 for infrequently requested library elements that do not justify
20 the overhead of automation. The hard discs may be removable or
21 nonremovable components of a large disc array. One embodiment is
22 commercially available as a RAID ("Random Array of Inexpensive
23 Discs"). The CD jukeboxes are available as Plextor Jukeboxes for
24 audio CDs. The other library elements may comprise individual
25 computers having one or more CD or DVD drives. The Assembly

1 Agent 19 controls an Application Programming Interface 21 to
2 hardware elements for writing the sound files onto a CD and
3 printing its label. Such a hardware element may be a Rimage
4 producer 22, which is a commercially available component for
5 burning CD's 24 and printing content information on the non-
6 reading surface of the CD.

7 The header fields are shown in Table I divided into three
8 groups reflecting the one to many relation of the header
9 information in the various packets. The Order Header has the key
10 field "order_id", which is a sequentially generated value
11 uniquely identifying a particular customer order. There is a one
12 to many relationship between the Order Header and the Item
13 Headers, which are associated with each disc to be produced in
14 response to an order from a customer. Each Item Header has a key
15 containing the order_id field value and a field
16 "custom_cd_order_id". The Item Header key fields uniquely
17 determine a particular disc to be produced. Similarly, there is
18 a one to many relationship between each Item Header and the
19 Detail Headers associated with each individual audio track on the
20 produced disc. The key fields of the Detail Header contain the
21 fields of the Item Header as well as the fields song_id and
22 cd_sequence_order, which uniquely identifies the sound track in
23 the library and its position (first, second, etc.) on the
24 customized CD.

25 Table I lists a sufficient set of headers. In that table, v

1 designates headers that are affected by verification (before
 2 order processing) from the web site. o designates headers
 3 affected by the order processor which places a lock code when it
 4 takes control of the order. All subsequent activity is
 5 controlled by lock codes. As long as the code is locked, control
 6 belongs to the element placing the lock. a designates codes
 7 accessed by the assembly agent. p designates codes accessed by
 8 the Printing Agent. m designates codes assigned by manual
 9 packaging. * designates a key code.

10 Table I

11 <u>Order Header</u>	
12 v	order id*
13 v	customer id
14 v	order date
15 v	order verified date
16 o	order processed date
	order extracted date
17 a	order assembled date
18 a	order burned date
	order payment type
19 aov	order status code
20 v	order type
21 pv	order ship to name
22 pv	order address
23 pv	bill to name
24 pv	bill to address

1	pv	ship method id
2	m	order ship date
3	pv	order price
		order assembler id
		order lock code
4	v	order priority code
		order priority
		print invoice
		is reprocess
5	v	mscs order id
6	v	original mscs order id
7	p	order print date
8	v	send verified email
9	v	send shipped email
10	o	order error code
11	m	ship flag
		order verified email sent
		order shipped email sent
12	v	order discount percent
13	v	order discount amount
14	v	order cc type
15	v	order referral id
16	v	order discount code
17	v	order gift wrap price
18	<u>Item Header</u>	
19	a	order id (FK)*
20	a	custom cd order id*

1	a	custom cd order title
2	p	custom cd order gift
3	p	gift wrap id
		custom cd order card message
		image id (FK)
		gift receiver id
4	ao	custom cd status
5	v	custom cd order price
6	a	dups
7	a	pof state
8	a	pof status
9	a	pof error record number
10	a	pof priority
11	a	pof output sc
12	a	pof order read ts
13	a	pof order cc ts
14	a	pof dsks produced
15	a	custom cd order lock code
16	p	print jewel case
		applied credits
17	<u>Detail Header</u>	
		order id (FK)*
		custom cd order id (FK)*
18	v	song id(FK)*
19	v	cd sequence order*
20	o	custom cd order song status
21	ao	song location wave file

1	o	song location media type
2	o	song location cluster id
3	o	song location array id
4	o	song location jukebox id
5	o	song location disk id
6	o	song location track id
7	o	custom cd lock code
8	v	master royalty amount
9	v	publisher royalty amount
10	o	custom cd order song retries
11	o	custom cd order song copy start
12	o	custom cd order song copy end
13	o	custom cd order song length

14 Orders for one or more customized compact discs having sound
 15 tracks or other multimedia data selected by the customer are
 16 received during interaction of the user with the producer's web
 17 site 1. Information identifying the order, customer information,
 18 billing details, shipping details, information necessary to
 19 confirm the order such as an e-mail address for the customer are
 20 obtained at the web site (server) 1. This information is sent to
 21 the central database 5, termed the Orders Database, which
 22 verifies the information in the order for internal consistency
 23 and credit worthiness. To do so, the Orders Database interfaces
 24 through a data access layer 6 with payment authorization systems
 25 8. The Orders Database transfers a data packet, which includes a

1 verified order token, to the Order Processor 3. The Order
2 Processor 3 is a digital computer having an internal memory and
3 network and database software. The Order Processor is programmed
4 to validate the information received from the Web Site by
5 checking the header fields filled in by the Web Site for format
6 consistency. These fields are indicated in Table I by the letter
7 v preceding the field name. The Order Processor then creates
8 extraction requests, which identify the sound track and its
9 library location. To perform this function, the Order Processor
10 contains a database associating each sound track in the library
11 with its physical location in the library.

12 Alternatively to the use of a Web Site, the orders may be
13 received on paper, in which case they are entered into the Order
14 Processor, or input into the order processor in an electronic
15 data interchange format (EDI).

16 The Order Processor as shown in Figure 2 queries a central
17 database 5 for information it needs to establish the next
18 order_id and for information on the location of each requested
19 sound track in the library. The Order Processor then stores the
20 information in the header fields identified in Table I by the
21 letter 'o' to the left of each header field, and places a lock
22 code on the order in the field custom_cd_order_lock_code. A lock
23 code identifies the hardware element that is authorized to
24 perform functions on the data identified in the header. All
25 subsequent activity is governed by lock codes.

1 The lock code is an important feature in the ability of the
2 system to recover from crashes. In effect, each hardware element
3 may operate independently upon those data packets which it has
4 locked by inserting its lock code into the appropriate field. In
5 the event that one hardware element has failed, the others may
6 continue to operate upon the data they have locked and to pass
7 packets on to the next hardware element in the processing
8 sequence until the defective element creates a backlog. Where
9 there are redundant hardware elements, the failure of one element
10 permits work flow to continue, except for the work which the
11 defective element has locked. Upon repair of the defective
12 element (or reassignment of its locked data packets to a similar
13 hardware element) the work which needs to be completed is
14 identified by the lock codes for the work locked by the repaired
15 element. Therefore, the work resumes with a minimum of
16 interruption.

17 Although the lock code has been described as a field element
18 in a data base header, it is just one example of a locking
19 mechanism. The term "locking mechanism" as used in this
20 application is to be understood as encompassing any mechanism or
21 method whereby access to a data packet by a processing component
22 is restricted or allowed. For example, a routine that recognizes
23 some property of the data within a packet and applies a criteria
24 for allowing access to that packet comprises a locking mechanism.
25 An example that could constitute a locking mechanism might be a

1 routine that recognizes the content of a packet from the format
2 of the data contained in the packet or from headers integrally
3 associated with the data.

4 The central database retains information on the lock code
5 status of each packet and controls the flow of information in the
6 system. It is the only centrally critical component of the
7 preferred embodiment of the system. In an alternative embodiment
8 within the scope of this invention, the central database may be
9 made to play a lesser role by having each hardware component
10 direct data packets to the next element in the production
11 sequence when it is ready to release its lock code.

12 After the order processor 3 has released its lock code, and
13 communicated that to the central database 5, control then passes
14 to the Extraction Agent depicted in Figure 3. When the
15 Extraction Agent is free to work on another data packet it
16 queries the central database 5 for a data packet that the Order
17 Processor has unlocked, and it locks that data packet with the
18 Extraction Agent's lock code. The Extraction Agent's role is to
19 extract the sound tracks or other multimedia data from the
20 library and to place it in a song queue. This is done in a
21 manner that is device independent with respect to the devices
22 comprising the library. To maintain device independence, the
23 Extraction Agent interfaces with an Application Programming
24 Interface (API) 9 that deals with the hardware specific
25 requirements of the library media. Those media may comprise hard

1 discs 11, jukeboxes of CDs 13, or other storage media for sound
2 tracks or other multimedia data 15. The Extraction API 9, under
3 the control of the Extraction Agent 7, extracts a sound track
4 from the library and stores it in a song queue buffer or
5 production cache 17, which may be a 70 gigabyte (and expandable)
6 redundant array of inexpensive discs. The song queue buffer or
7 production cache is a temporary storage media. The temporary
8 storage media may comprise one or more drive storage media, or
9 other storage media such as flash memories or RAMs.

10 When this is accomplished the relevant header fields labeled
11 "a" in Table I are filled in, and the Extraction Agent records
12 this in the central database and releases its lock code.

13 The Assembly Agent 19, depicted in Figure 4, queries the
14 central database for headers which have been released by the
15 Extraction Agent. Where such a header exists the Assembly Agent
16 controls the process of recording the sound tracks or other
17 multimedia data onto the end-product CD 24 and printing
18 information on the surface of the CD (such as a name selected by
19 the user and the names of the sound tracks or other multimedia
20 data). The Assembly Agent 19 interfaces with an Assembly API
21 21 to again maintain device independence. The Assembly API 21
22 accommodates the hardware requirements needed to burn (i.e.
23 write) the CD and to print the information on the surface of the
24 CD. When the Assembly Agent has completed its process it
25 releases its lock on the header and communicates this to the

1 central database.

2 The next stage takes place when the Printing Agent 23,
3 depicted in Figure 5, seeks from the central database the
4 identity of a task released by the Assembly Agent. The Printing
5 Agent then places its lock on the header and proceeds to prepare
6 at a print station 26 the jewel case, invoice, letter to the
7 customer, and if requested a gift card. Then the Printing Agent
8 fills in the header elements, which are marked "p" in Table I,
9 releases its lock, and so informs the central database.

10 The final stage is the Shipping Agent 25. This may involve
11 automated or entirely manual operations such as packaging,
12 applying postage, and shipping.

13 It should be understood that the system as described has as
14 one of its advantages that it is scalable. Each of the hardware
15 elements may be replicated as often as necessary to handle the
16 volume of data traversing the network. As shown in Fig. 6, the
17 network topology of the present invention is configured into two
18 networks, a TCP/IP network 27 and a CD-Production Network 29
19 interfaced by a router 31. The network portion 27 (see Figure 7)
20 preferably utilizes the TCP/IP format and services the Web Site
21 1, Central Database 5, and otherwise connects into network
22 elements that interface with the customers and staff supporting
23 the system. The router 31 may include a firewall for security to
24 protect the other network portion 29, which utilizes both TCP/IP
25 and IPX/SPX formats in order to more efficiently handle the large

1 data files associated with sound tracks or other multimedia data.
2 The TCP/IP format also permits the network portion 29 to be
3 distributed among remote sites, such as over the Internet, which
4 utilizes the TCP/IP protocol.

5 Fig. 1 includes a depiction of the CD Production Network 29.
6 Network 29 may be a multi 100 Base T Ethernet network. On the
7 network may be a multiplicity of Extraction Agents running
8 multiple jukeboxes, and multiple Assembly Agents running Rimage
9 units that burn the CD's, as well as several Manual Extraction
10 Agents (which supplement the automated extraction elements).
11 These manual elements are essentially a library that is available
12 for "sneaker net" integration into the work flow, i.e. they are
13 brought by hand into a terminal that is on the CD Production
14 network.

15 The system described in this preferred embodiment is capable
16 of handling the production of 5,000 customized CD's per day
17 utilizing 200 ports on the CD Production network. It is
18 conveniently expandable to at least 50,000 CDs per day output by
19 utilizing 2100 ports, although there is no theoretical limit to
20 the expandability of this system.

21 As shown in Fig. 1, the system's operation can also be
22 improved by the monitoring of the demand for space on the song
23 queue buffer 17. The monitoring takes place by noting the volume
24 of the request made by data packets as they are unlocked by the
25 order processor and the volume of requests that have been

1 satisfied as data packets are unlocked by the Assembly Agent.
2 This is indicated in Fig. 1 as "valves" 33, 35 placed on the
3 network at those locations. In effect the "valves" delay further
4 processing when the volume of the requested data greatly exceed
5 that already processed in order to prevent data from overwhelming
6 the song queue buffer.

7 Although the invention has been described in terms of a
8 preferred embodiment it will be obvious to person of skill in
9 this art to substitute other elements for those described and to
10 make modifications which nevertheless retain the benefits of the
11 invention. Accordingly the scope of the invention should not be
12 limited to the details of the preferred embodiment, but should be
13 determined from the proper legal construction of the following
14 claims:

15 We claim:

- 16 1. A fault tolerant and scalable system for manufacturing large
17 quantities of customized CDs, each CD comprising audio tracks or
18 other multimedia content whose content is selected by a customer,
19 said system comprising
20 an order processor receiving customer information,
21 a plurality of agents comprising
22 an extraction agent for extracting audio tracks or
23 other multimedia content from recorded media into a temporary
24 storage media,
25 an assembly agent for writing the audio tracks or other

1 multimedia content onto a CD,
2 means for monitoring the activity of said order
3 processor, extraction agent, and assembly agent and for providing
4 a locking mechanism for data packets associated with said
5 content,

6 a network interconnecting said order processor, extraction
7 agent, and assembly agent, said network providing access to said
8 data packets as controlled by said locking mechanism,

9 said agent implementing a task under control of the locking
10 mechanism and unlocking access to the content when the task is
11 completed, and, in the event of a system startup or system
12 failure, commencing its activity on content locked by the locking
13 mechanism.

14 2. The system of claim 1 wherein said means for monitoring the
15 activity of said order processor comprises a database.

16 3. The system of claim 1 wherein said locking mechanism
17 comprises fields contained in header tokens.

18 4. The system of claim 3 wherein said locking mechanism
19 comprises lock codes contained in said header tokens.

20 5. The system of claim 1 wherein said agents act independently
21 of each other.

1 6. The system of claim 3 wherein said header tokens comprise
2 order headers, item headers and detail headers.

3 7. The system of claim 3 wherein said agents act independently
4 of each other

5 8. A fault tolerant and scalable system for manufacturing large
6 quantities of customized CDS, each CD comprising audio tracks or
7 other multimedia content whose content is selected by a customer,
8 said system comprising
9 an order processor receiving customer information,
10 a plurality of agents comprising
11 an extraction agent for extracting audio tracks or
12 other multimedia content from recorded media into a temporary
13 storage media,
14 an assembly agent for writing the audio tracks or other
15 multimedia content onto a CD,
16 a database having records monitoring the activity of
17 said order processor, extraction agent, and assembly agent, said
18 records comprising fields contained in header tokens,
19 a network interconnecting said order processor, extraction
20 agent, and assembly agent, said network carrying said tokens,
21 each token containing one or more lock code fields, said central
22 database receiving from said network and adapted to store lock
23 codes in said lock code fields,

1 said agent implementing a task after locking its token and
2 unlocking the token when the task is completed, and, in the event
3 of a system startup or system failure, commencing its activity on
4 its locked tokens.

5 9. The system of claim 8 wherein said agents act independently
6 of each other.

7 10. The system of claim 8 wherein said tokens comprise order
8 headers, item headers and detail headers.

9 11. The system of claim 8 wherein said customer information is
10 received from a web site.

11 12. The system of claim 8 wherein said customer information is
12 received from a kiosk.

13 13. The system of claim 8 wherein said customer information is
14 received from scanned handwritten orders or printed orders
15 scanned for optical character recognition.

16 14. The system of claim 8 wherein said customer information is
17 received by e-mail.

18 15. The system of claim 8 wherein said customer information is

1 received in an electronic data interchange format.

2 16. The system of claim 8 wherein said assembly agent prints
3 information for display on a surface of the CD.

4 17. The system of claim 8 wherein said plurality of agents
5 further comprises a printing agent, and a shipping agent.

6 18. The system of claim 8 wherein said extraction agent provides
7 extraction instructions to an extraction application program
8 interface.

9 19. The system of claim 8 wherein and said temporary storage
10 medium comprises one or more drive storage media.

11 20. The system of claim 8 wherein and said temporary storage
12 medium comprises flash memory or RAM.

13 21. The system of claim 8 wherein said assembly agent provides
14 assembly instructions to an assembly application program
15 interface.

16 22. The system of claim 8 wherein said tokens comprise
17 an order header associated with one customer order,
18 one or more item headers indexed to one of said order

1 headers and associated with one CD to be produced, and
2 one or more detail headers indexed to one of said item
3 headers, and associated with one audio or other multimedia
4 content track.

5 23. The system of claim 8 wherein said network uses both TCP/IP
6 and IPX/SPX formats.

7 24. The system of claim 8 wherein said lock codes comprise
8 extraction agent lock codes, and
9 assembly agent lock codes.

10 25. The system of claim 8 wherein said agents have an engaged
11 status and inquiry status, each agent when in said inquiry status
12 calling upon said central database for the identity of data
13 packets having unlocked tokens appropriate to said agent.

14 26. The system of claim 12, wherein said agents act
15 independently of each other.

16 27. The system of claim 8 further comprising
17 an inflow valve monitoring the volume of orders brought into
18 the system and
19 an outflow valve monitoring the volume of orders executed by
20 the system, said valves sending signals on the network to control

1 the activity of agents in said system.

2 28. The system of claim 1, wherein said network comprises a
3 website side and a production side connected via a router, said
4 production being secured from intrusion from said website side.

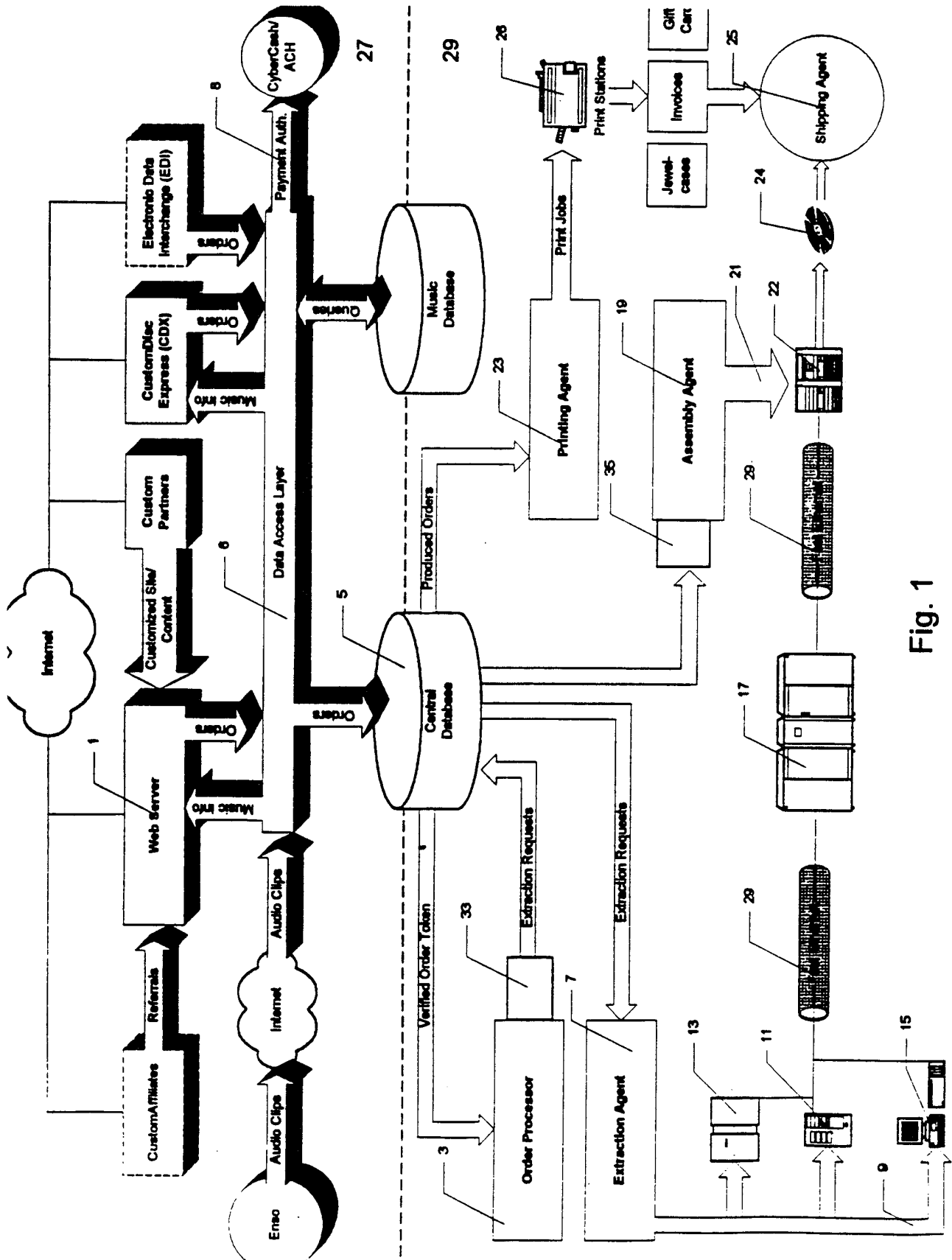


Fig. 1

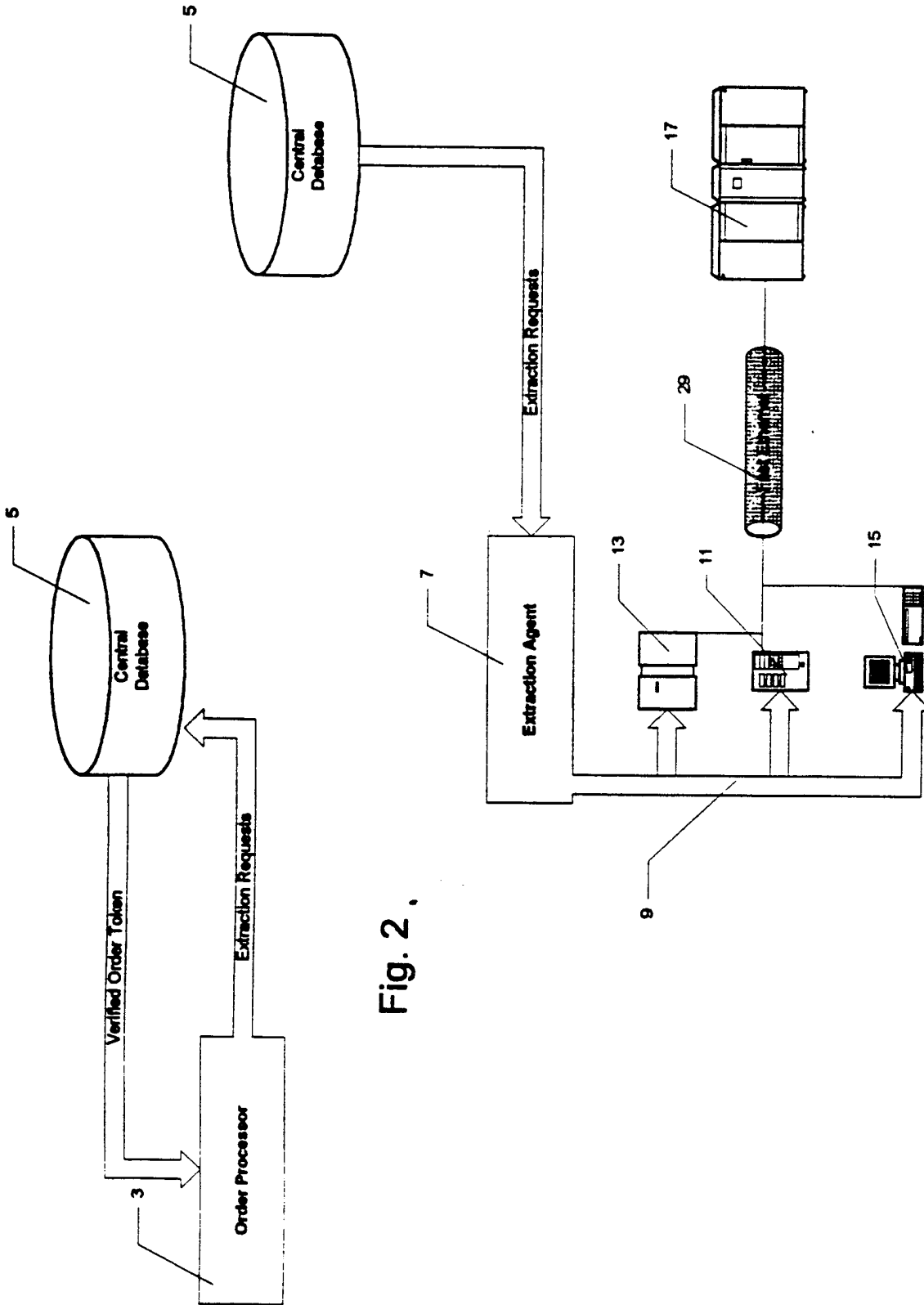


Fig. 2.

Fig. 3

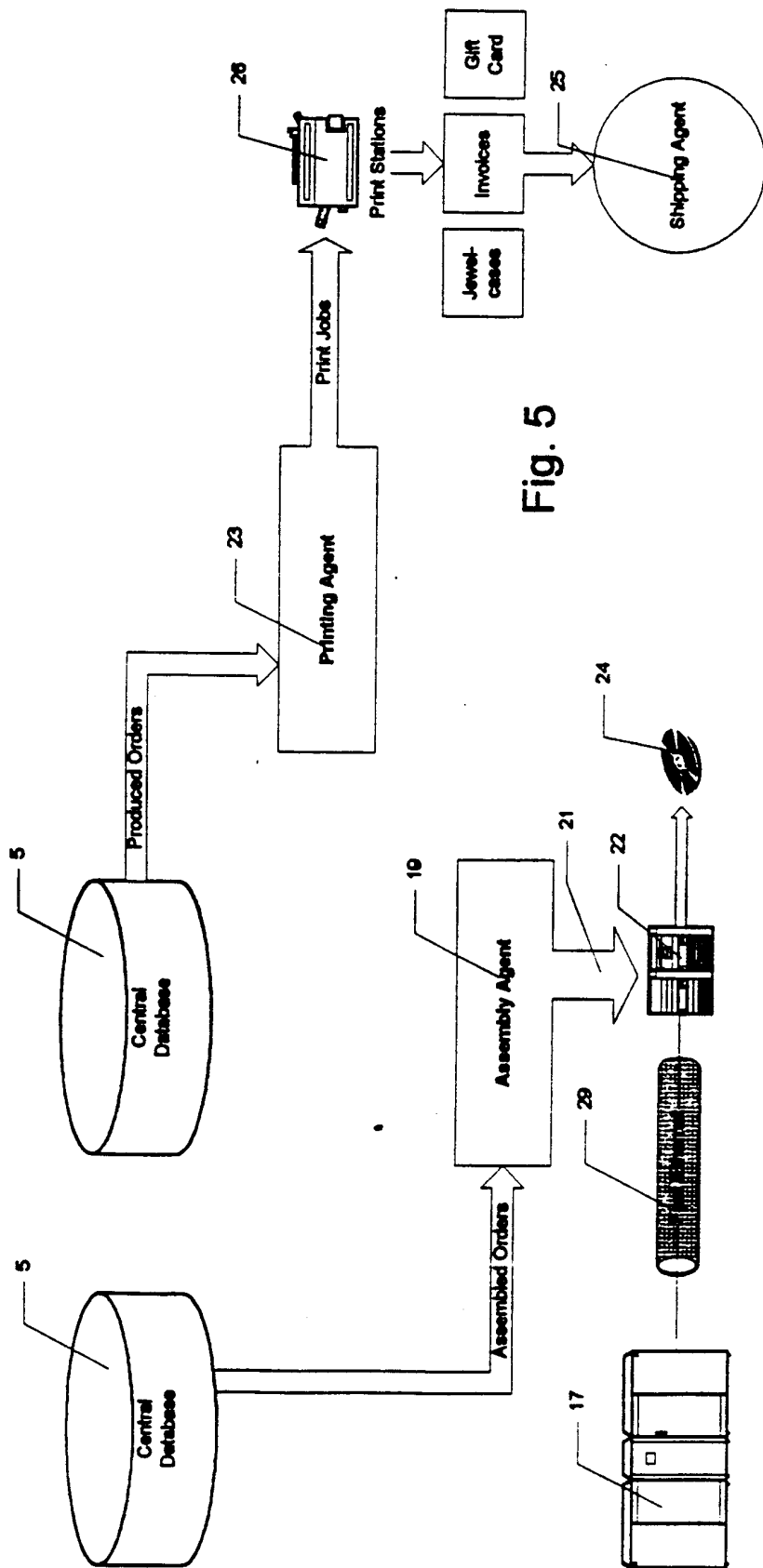


Fig. 5

Fig. 4

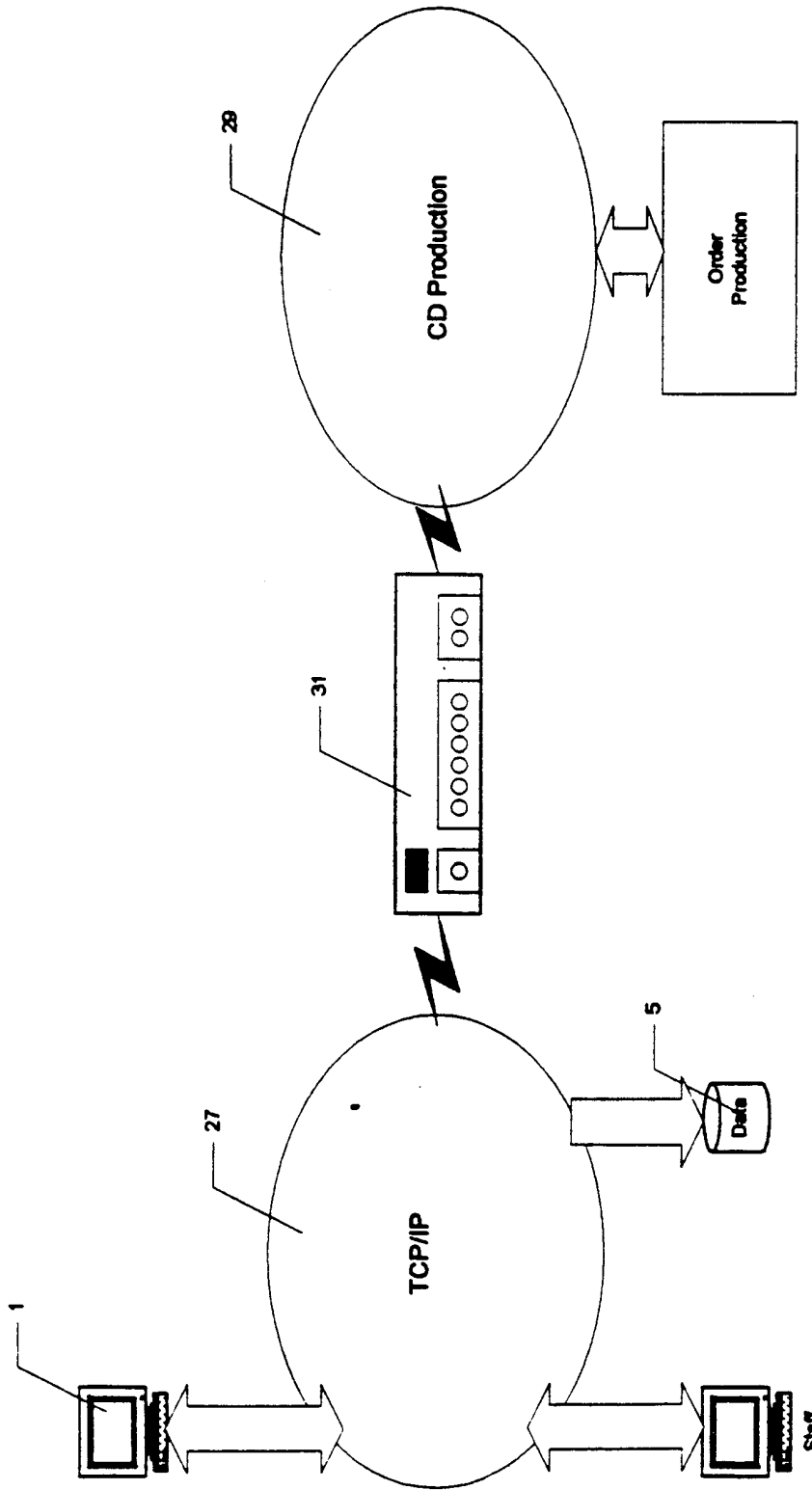


Fig. 6

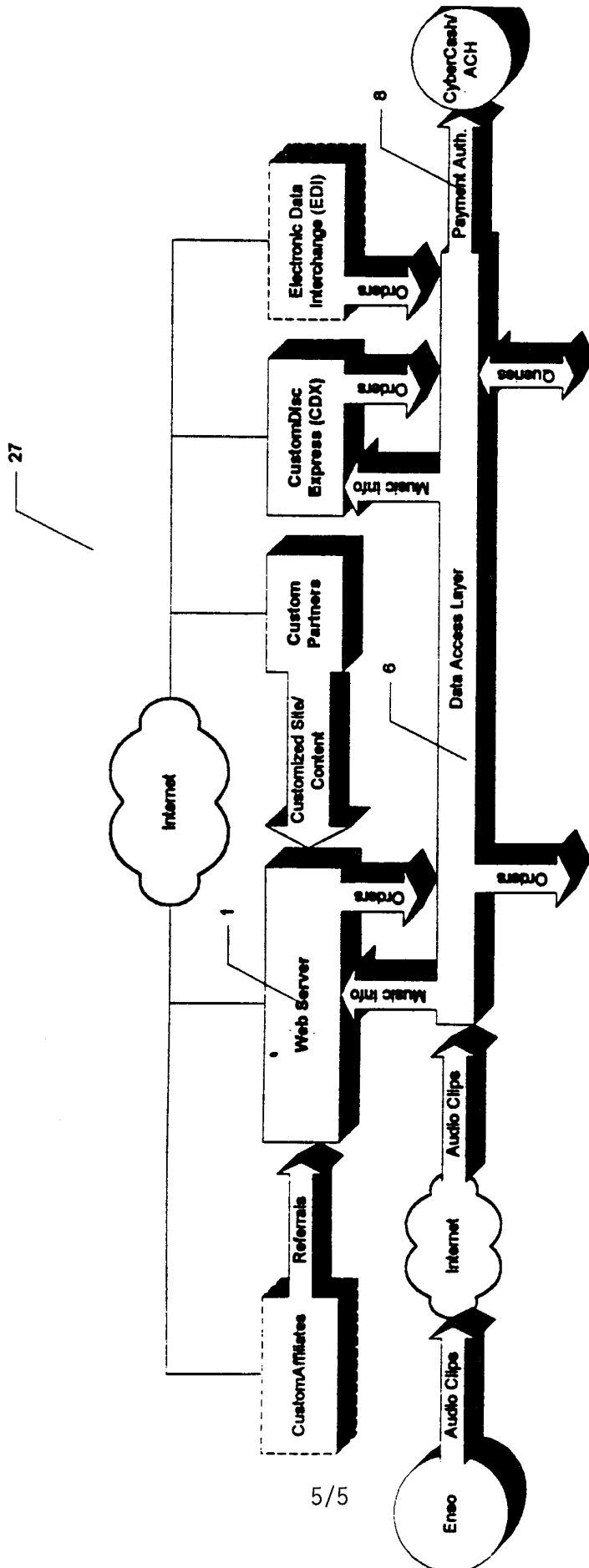


Fig. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/00592

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(7) : G11B 07/00
 US CL : 705/26
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 U.S. : 705/26

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 West

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	US 5,860,068 A (COOK) 12 January 1999, abstract, col. 2, lines 20-52, col. 4, lines 54-66, col. 5, lines 35-54, col. 8, lines 17-39.	1-28

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
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Date of the actual completion of the international search 01 JUNE 2000	Date of mailing of the international search report 27 JUN 2000
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